

Title (en)  
HIGH-YIELD-RATIO HOT-ROLLED HIGH-STRENGTH STEEL SHEET EXCELLENT IN FORMABILITY OR IN BOTH OF FORMABILITY AND SPOT WELDABILITY, AND PRODUCTION THEREOF

Title (de)  
WARMGEWALZTES, HOCHFESTES STAHLBLECH MIT HOHEM STRECKGRENZENVERHÄLTNIS UND HERVORRAGENDER UMFORMBARKEIT ODER PUNKTSCHWEISSBARKEIT UND DESSEN HERSTELLUNG

Title (fr)  
TOLE D'ACIER LAMINEE A CHAUD A RAPPORT D'ELASTICITE ELEVE ET A HAUTE RESISTANCE PRESENTANT UNE PLASTICITE OU UNE PLASTICITE/SOUDABILITE PAR POINTS EXCELLENTE, ET SON PROCEDE DE PRODUCTION

Publication  
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Application  
**EP 92917390 A 19920528**

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Abstract (en)  
[origin: US5505796A] PCT No. PCT/JP92/00698 Sec. 371 Date Aug. 27, 1993 Sec. 102(e) Date Aug. 27, 1993 PCT Filed May 28, 1992 PCT Pub. No. WO92/21784 PCT Pub. Date Dec. 10, 1992. A high yield ratio-type, hot rolled high strength steel sheet excellent in both formability and spot weldability, containing not less than 5% of retained austenite, and a process for producing the same are provided. The steel sheet contains 0.05 to less than 0.15% by weight or 0.15 to less than 0.30% by weight of C, 0.5 to 3.0% by weight of Si, 0.5 to 3.0% by weight of Mn, more than 1.5 to 6.0% by weight of Si and Mn in total, not more than 0.02% by weight of P, no more than 0.01% by weight of S, and 0.005 to 0.10% by weight of Al, the balance essentially being Fe, and is composed of three phases of ferrite, bainite and retained austenite as a microstructure, and having a ratio (VF/dF) of ferrite volume fraction (VF) to ferrite grain size (dF) of not less than 20 (not less than 7 in case of 0.15 to less than 0.30% by weight of C), a volume fraction of retained austenite having grain sizes of not more than 2  $\mu$ m being 5% or more, a yield ratio (YR) of not less than 60%, a strength-ductility balance (tensile strength $\times$ total elongation) of not less than 2,000 (kgf/mm<sup>2</sup>), an enlargement ratio (d/d<sub>0</sub>) of not less than 1.4 (not less than 1.1 in case of 0.15 to less than 0.30% by weight of C), and a uniform elongation of not less than 15% (not less than 10% in case of 0.15 to less than 0.30% by weight of C).

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**C22C 38/06**; **C21D 8/02**; **C21D 9/46**; **C22C 38/02**; **C22C 38/04**

IPC 8 full level  
**C21D 8/02** (2006.01); **C21D 8/04** (2006.01); **C22C 38/00** (2006.01); **C22C 38/02** (2006.01); **C22C 38/04** (2006.01); **C22C 38/06** (2006.01)

CPC (source: EP US)  
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